Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application.

These amendments introduce no new matter and support for the amendment is replete throughout the specification and claims as originally filed. These amendments are made without prejudice and are not to be construed as abandonment of the previously claimed subject matter, or agreement with any objection or rejection of record.

Listing of Claims:

1. (Original) A method of detecting the presence or absence of a first posttranslational modification of a plurality of proteins in a sample, the method comprising:

providing the sample comprising the proteins;

providing a pooled population of a plurality of subsets of particles, the particles in each subset comprising a capture reagent specific for at least one of the proteins, and the particles in each subset being distinguishable from those of every other subset;

providing a single first detection reagent, the first detection reagent providing an indication of the presence of the first posttranslational modification;

binding the proteins to the capture reagents;

exposing the proteins to the first detection reagent; and,

determining whether each of the proteins comprises the first posttranslational modification by identifying each subset of particles and detecting the presence or absence of the first detection reagent on each subset of particles.

2. (Original) The method of claim 1, wherein the particles in each subset comprise a capture reagent specific for one of the proteins.

3. (Original) The method of claim 1, wherein binding the proteins to the capture reagents comprises exposing the pooled population of subsets of particles to the sample, and wherein exposing the proteins to the first detection reagent comprises adding the first detection reagent to the exposed pooled population.

4. (Original) The method of claim **3**, comprising washing the exposed pooled population prior to adding the first detection reagent.

5. (Original) The method of claim **1**, wherein the first posttranslational modification is phosphorylation.

6. (Original) The method of claim **5**, wherein the first posttranslational modification is phosphorylation of a serine, threonine or tyrosine residue, or a combination thereof.

7. (Original) The method of claim **1**, wherein the first posttranslational modification is ubiquitination, sumoylation, glycosylation, prenylation, myristoylation, farnesylation or acetylation.

8. (Original) The method of claim **1**, wherein the particles are microspheres.

9. (Original) The method of claim **8**, wherein the microspheres of each subset are distinguishable from those of the other subsets on the basis of their fluorescent emission spectra, their diameter, or a combination thereof.

10. (Original) The method of claim **1**, wherein the capture reagent comprises one or more of: a nucleic acid, an oligonucleotide, a polypeptide, an antibody, a recombinant protein, a synthetic peptide, a substrate analog or a ligand.

11. (Original) The method of claim **1**, wherein the first detection reagent comprises one or more of: a nucleic acid, an oligonucleotide, a polypeptide, an antibody, a recombinant protein, or a synthetic peptide.

12. (Original) The method of claim **1**, wherein the first detection reagent is an antibody specific for a phosphorylated tyrosine, serine or threonine residue, or a combination thereof.

13. (Original) The method of claim **1**, wherein the first detection reagent is an antibody specific for ubiquitin, an antibody specific for a carbohydrate moiety or an antibody specific for an acetyl group.

14. (Original) The method of claim **1**, wherein the first detection reagent comprises a first fluorescent label, and wherein detecting the presence or absence of the first detection reagent comprises detecting a first fluorescent signal from the first label.

15. (Original) The method of claim **1**, wherein detecting the presence or absence of the first detection reagent comprises: adding a labeled secondary agent that binds the first detection reagent and detecting a signal from the labeled secondary agent.

16. (Original) The method of claim **1**, wherein the proteins comprise one or more of: an endogenous cellular protein or a protein encoded by an infectious agent.

17. (Original) The method of claim **1**, wherein the plurality of proteins comprises a plurality of protein kinases.

18. (Original) The method of claim **1**, wherein the sample is derived from an animal, a human, a plant, a cultured cell or a microorganism.

19. (Original) The method of claim **1**, wherein the sample comprises one or more of: a cell lysate, an intercellular fluid, a conditioned culture medium or a bodily fluid.

20. (Original) The method of claim **1**, wherein the sample is derived from a tissue, a biopsy or a tumor.

21. (Original) The method of claim **1**, comprising recovering at least one of the subsets of particles.

22. (Original) The method of claim **1**, comprising:

providing a second detection reagent;

exposing the proteins to the second detection reagent; and,

detecting the presence or absence of the second detection reagent on each subset of particles.

23. (Original) The method of claim **22**, wherein the second detection reagent provides an indication of the presence of a second posttranslational modification.

24. (Original) A method of diagnosing or monitoring disease by detecting the presence or absence of a phosphorylated amino acid residue in a plurality of protein kinases, the method comprising:

providing a sample comprising the protein kinases;

providing a pooled population of a plurality of subsets of particles, the particles in each subset comprising a capture reagent specific for at least one of the kinases, and the particles in each subset being distinguishable from those of every other subset;

providing a single first detection reagent, the first detection reagent providing an indication of the presence of the phosphorylated amino acid residue;

binding the protein kinases to the capture reagents;

exposing the protein kinases to the first detection reagent;

generating a kinase activity profile for the sample by determining whether each of the kinases comprises the phosphorylated amino acid residue by identifying each subset of particles and detecting the presence or absence of the first detection reagent on each subset of particles; and,

comparing the kinase activity profile for the sample with one or more control kinase activity profiles.

25. (Original) The method of claim **24**, wherein the particles in each subset comprise a capture reagent specific for one of the kinases.

26. (Original) The method of claim **24**, wherein binding the protein kinases to the capture reagents comprises exposing the pooled population of subsets of particles to the sample, and wherein exposing the protein kinases to the first detection reagent comprises adding the first detection reagent to the exposed pooled population.

27. (Original) The method of claim **26**, comprising washing the exposed pooled population prior to adding the first detection reagent.

28. (Original) The method of claim **24**, wherein the phosphorylated amino acid residue is a serine, threonine or tyrosine residue, or a combination thereof.

29. (Original) The method of claim **24**, wherein the particles are microspheres.

30. (Original) The method of claim **29**, wherein the microspheres of each subset are distinguishable from those of the other subsets on the basis of their fluorescent emission spectra, their diameter, or a combination thereof.

31. (Original) The method of claim **24**, wherein the capture reagents are antibodies.

32. (Original) The method of claim **24**, wherein the first detection reagent comprises one or more of: a nucleic acid, an oligonucleotide, a polypeptide, an antibody, a recombinant protein or a synthetic peptide.

33. (Original) The method of claim **24**, wherein the first detection reagent is an antibody specific for a phosphorylated tyrosine, serine or threonine residue, or a combination thereof.

34. (Original) The method of claim **24**, wherein the first detection reagent comprises a fluorescent label, and wherein detecting the presence or absence of the first detection reagent comprises detecting a fluorescent signal from the label.

35. (Original) The method of claim **24**, wherein detecting the presence or absence of the first detection reagent comprises: adding a labeled secondary agent that binds the first detection reagent and detecting a signal from the labeled secondary agent.

36. (Original) The method of claim **24**, wherein the kinases comprise one or more of: an endogenous cellular protein or a protein encoded by an infectious agent.

37. (Original) The method of claim **24**, wherein the sample is derived from an animal, a human or a plant.

38. (Original) The method of claim **24**, wherein the sample comprises a cell lysate.

39. (Original) The method of claim **24**, wherein the sample is derived from a tissue, a biopsy or a tumor.

40. (Original) The method of claim **24**, wherein the control kinase activity profiles comprise one or more of: a kinase activity profile for a normal, healthy cell; a kinase activity profile for a diseased cell; or a kinase activity profile for a second sample from the same source, taken at a different time.

41. (Original) The method of claim **24**, comprising recovering at least one of the subsets of particles.

42. (Original) The method of claim **24**, comprising:

providing a second detection reagent;

exposing the protein kinases to the second detection reagent; and,

detecting the presence or absence of the second detection reagent on each subset of particles.

43.-63. (Cancelled).

64. (Original) A composition, comprising:

a plurality of subsets of particles, the particles in each subset comprising a capture reagent specific for at least one of a plurality of proteins comprising or suspected of comprising a first posttranslational modification, and the particles in each subset being distinguishable from those of every other subset; and,

a single first detection reagent, the first detection reagent providing an indication of the presence of the first posttranslational modification.

65. (Original) The composition of claim **64**, wherein the particles in each subset comprise a capture reagent specific for one of the plurality of proteins.

66. (Original) The composition of claim **64**, comprising the plurality of proteins comprising or suspected of comprising the first posttranslational modification.

67. (Original) The composition of claim **66**, wherein each of the plurality of proteins is associated with one of the subsets of particles.

68. (Original) The composition of claim **66**, wherein the proteins comprise one or more of: an endogenous cellular protein or a protein encoded by an infectious agent.

69. (Original) The composition of claim **66**, wherein the plurality of proteins comprises a plurality of protein kinases.

70. (Original) The composition of claim **64**, wherein the first posttranslational modification is phosphorylation of a serine, threonine or tyrosine residue, or a combination thereof.

71. (Original) The composition of claim **64**, wherein the first posttranslational modification is ubiquitination, sumoylation, glycosylation, prenylation, myristoylation, farnesylation or acetylation.

72. (Original) The composition of claim **64**, wherein the particles are microspheres.

73. (Original) The composition of claim **72**, wherein the microspheres of each subset are distinguishable from those of the other subsets on the basis of their fluorescent emission spectra, their diameter, or a combination thereof.

74. (Original) The composition of claim **64**, wherein the capture reagent comprises one or more of: a nucleic acid, an oligonucleotide, a polypeptide, an antibody, a recombinant protein, a synthetic peptide, a substrate analog or a ligand.

75. (Original) The composition of claim **64**, wherein the first detection reagent comprises one or more of: a nucleic acid, an oligonucleotide, a polypeptide, an antibody, a recombinant protein, or a synthetic peptide.

76. (Original) The composition of claim **64**, wherein the first detection reagent is an antibody specific for a phosphorylated tyrosine, serine or threonine residue, or a combination thereof.

77. (Original) The composition of claim **64**, wherein the first detection reagent is an antibody specific for ubiquitin, an antibody specific for a carbohydrate moiety, or an antibody specific for an acetyl group.

78. (Original) The composition of claim **64**, wherein the first detection reagent comprises a first fluorescent label.

79. (Original) The composition of claim **64**, comprising a labeled secondary agent that binds the first detection reagent.

80. (Original) The composition of claim **64**, comprising a second detection reagent.

81. (Original) The composition of claim **80**, wherein the second detection reagent provides an indication of the presence of a second posttranslational modification.

82. (Original) A system comprising the composition of claim **64** and one or more fluid or particle handling or fluid or particle containing elements.

83. (Original) A kit comprising each of the components of the composition of claim **64** and instructions for using the composition to detect at least one posttranslational modification, packaged in one or more containers.

84.-108. (Cancelled).

109. A kit for detecting the presence or absence of a first posttranslational modification of a plurality of proteins in a sample, comprising:

a plurality of subsets of particles, the particles in each subset being distinguishable from those of every other subset; and,

a single first detection reagent capable of providing an indication of the presence of the first posttranslational modification,

packaged in one or more containers.

110. (Original) The kit of claim **109**, wherein the particles in each subset comprise a capture reagent specific for at least one of the proteins.

111. (Original) The kit of claim **110**, wherein the capture reagent is specific for one of the proteins.

112. (Original) The kit of claim **110**, wherein the proteins are protein kinases and wherein each capture reagent is specific for one of the protein kinases.

113. (Original) The kit of claim **110**, wherein the capture reagent comprises one or more of: a nucleic acid, an oligonucleotide, a polypeptide, an antibody, a recombinant protein, a synthetic peptide, a substrate analog or a ligand.

114. (Original) The kit of claim **109**, wherein the first posttranslational modification is phosphorylation of a serine, threonine or tyrosine residue, or a combination thereof.

115. (Original) The kit of claim **109**, wherein the first posttranslational modification is ubiquitination, sumoylation, glycosylation, prenylation, myristoylation, farnesylation or acetylation.

116. (Original) The kit of claim **109**, wherein the particles are microspheres.

117. (Original) The kit of claim **116**, wherein the microspheres of each subset are distinguishable from those of the other subsets on the basis of their fluorescent emission spectra, their diameter, or a combination thereof.

118. (Original) The kit of claim **109**, wherein the first detection reagent comprises one or more of: a nucleic acid, an oligonucleotide, a polypeptide, an antibody, a recombinant protein, or a synthetic peptide.

119. (Original) The kit of claim **109**, wherein the first detection reagent is an antibody specific for a phosphorylated tyrosine, serine or threonine residue, or a combination thereof.

120. (Original) The kit of claim **109**, wherein the first detection reagent is an antibody specific for ubiquitin, an antibody specific for a carbohydrate moiety or an antibody specific for an acetyl group.

121. (Original) The kit of claim **109**, wherein the first detection reagent comprises a fluorescent label.

122. (Original) The kit of claim **109**, wherein the kit comprises a labeled secondary agent that binds the first detection reagent.

123. (Original) The kit of claim **109**, comprising a second detection reagent.

124. (Original) The kit of claim **123**, wherein the second detection reagent provides an indication of the presence of a second posttranslational modification.

125. (Original) The kit of claim **109**, comprising instructions for use of the kit.

126. (Original) The kit of claim **125**, wherein the instructions comprise: instructions for attaching a capture reagent to each subset of particles, if the capture reagent is not already attached; instructions for binding the proteins to the capture reagents; instructions for exposing the proteins to the first detection reagent; instructions for determining whether each of the proteins comprises the first posttranslational modification by identifying each subset of particles and detecting the presence or absence of the first detection reagent; or a combination thereof.

127.-148. (Cancelled).